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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,699	03/03/2004	Makoto Kawakami	60188-792	4322

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EXAMINER	
HENN, TIMOTHY J	

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
06/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,699	KAWAKAMI ET AL.	
	Examiner	Art Unit	
	Timothy J. Henn	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 7-8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 2, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. (JP 06-311425) in view of Yamashita (US 5,343,302).

[claim 1]

Regarding claim 1, Goto discloses a method for correcting lens shading in image data captured by a camera, the method comprising: obtaining for a pixel in the image data a distance value indicating the distance form an optical-axis position to the pixel

(Figure 5; Paragraphs 0006-0014; i.e. determining which concentric circle/rectangle the pixel data falls in); from the obtained distance value, obtaining correction data for the pixel (Figure 5; Paragraphs 0006-0014; i.e. reading a correction value corresponding to the concentric circle/rectangle) and based on the obtained correction data, correcting a pixel value of the pixel (Paragraphs 0006-0014) wherein the correction data is divided into a plurality of segments (Figures 5A and 5B). However, Goto determines correction values through the use of an initial exposure and does not disclose the use of an approximation function in the plurality of segments wherein the approximation function is represented by a quadratic function as claimed.

Yamashita discloses a shading correction system in which a shading correction value can be obtained based on distance and a parabolic wave (i.e. a quadratic equation; Figure 1; c. 4, ll. 31-42). The examiner notes that the parabolic wave of Yamashita is used for all regions of the image and would therefore cover the plurality of segments disclosed by Goto. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a shading correction system such as that described by Yamashita to generate high precision shading correction values without requiring an initial image capture to obtain shading correction values.

[claim 2]

Regarding claim 2, Goto discloses segments which are established so as to be relatively wide in a range closer to the optical-axis position and to be relatively narrow farther from the optical-axis position (Figures 5A and 5B).

[claim 5]

Regarding claim 5, Goto discloses a system for correcting lens shading in image data captured by a camera, the system comprising: a distance operation unit for obtaining for a pixel in the image data, a distance value indicating the distance from an optical-axis position to the pixel (Figure 5; Paragraphs 0006-0014; i.e. determining which concentric circle/rectangle the pixel data falls in); a correction-data operation unit for obtaining, from the distance value obtained by the distance operation unit, correction data for the pixel (Figure 5; Paragraphs 0006-0014; i.e. reading a correction value corresponding to the concentric circle/rectangle) and a correction unit for correcting a pixel value of the pixel based on the correction data obtained by the correction-data operation unit (Paragraphs 0006-0014) wherein the correction data is divided into a plurality of segments (Figures 5A and 5B). However, Goto determines correction values through the use of an initial exposure and does not disclose the use of an approximation function in the plurality of segments wherein the approximation function is represented by a quadratic function as claimed.

Yamashita discloses a shading correction system in which a shading correction value can be obtained based on distance and a parabolic wave (i.e. a quadratic equation; Figure 1; c. 4, ll. 31-42). The examiner notes that the parabolic wave of Yamashita is used for all regions of the image and would therefore cover the plurality of segments disclosed by Goto. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a shading correction system such as that described by Yamashita to generate high precision shading correction

values without requiring an initial image capture to obtain shading correction values.

[claim 7]

Regarding claim 7, note that Goto discloses a digital camera including the shading correction system (Paragraph 0024), but does not explicitly disclose a rewritable memory in which data regarding the sample points is stored. Official Notice is taken that digital cameras including rewriteable memory which stores details of how the camera operates (e.g. firmware controlling camera operation) are well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a rewriteable memory which contains details of the sample points (e.g. firmware controlling camera operation) in the camera of Goto to allow for updating of the camera if necessary at a later date. For further details, see the rejection of claim 5 above.

4. Claims 3, 4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto et al. (JP 06-311425) in view of Yamashita (US 5,343,302) in view of Ban (US 5,818,523).

[claim 3]

Regarding claim 3, Goto discloses a method for correcting lens shading in image data captured by a camera, the method comprising: obtaining for a pixel in the image data a distance value indicating the distance form an optical-axis position to the pixel (Figure 5; Paragraphs 0006-0014; i.e. determining which concentric circle/rectangle the pixel data falls in); from the obtained distance value, obtaining correction data for the

pixel (Figure 5; Paragraphs 0006-0014; i.e. reading a correction value corresponding to the concentric circle/rectangle) and based on the obtained correction data, correcting a pixel value of the pixel (Paragraphs 0006-0014) wherein the correction data is divided into a plurality of segments (Figures 5A and 5B). However, Goto determines correction values through the use of an initial exposure and does not disclose the use of an approximation function in the plurality of segments wherein the approximation function is represented by a quadratic function as claimed.

Yamashita discloses a shading correction system in which a shading correction value can be obtained based on distance and a parabolic wave (i.e. a quadratic equation; Figure 1; c. 4, ll. 31-42). The examiner notes that the parabolic wave of Yamashita is used for all regions of the image and would therefore cover the plurality of segments disclosed by Goto. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a shading correction system such as that described by Yamashita to generate high precision shading correction values without requiring an initial image capture to obtain shading correction values. However, Goto in view of Yamashita does not disclose obtaining independent horizontal and vertical correction values and summing the correction values as claimed.

Yamashita discloses generating a correction value from a parabolic wave generator and horizontal and vertical sync signals, but does not disclose exactly how it is done. Ban discloses a system which uses horizontal and vertical sync values and parabolic wave generators which input into an adder for determining a final correction value (Figure 2A; c. 1, ll. 26-34). Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to use a correction value generating method as taught by Ban to obtain a proper correction value for performing shading correction based on horizontal and vertical sync signals without complicated mathematical processing.

[claim 4]

Regarding claim 4, Goto discloses segments which are established so as to be relatively wide in a range closer to the optical-axis position and to be relatively narrow farther from the optical-axis position (Figures 5A and 5B).

[claim 6]

Regarding claim 6, Goto discloses a system for correcting lens shading in image data captured by a camera, the system comprising: a distance determining unit for determining for a pixel in the image data a distance value indicating the distance form an optical-axis position to the pixel (Figure 5; Paragraphs 0006-0014; i.e. determining which concentric circle/rectangle the pixel data falls in); a correction value determining unit for determining from the obtained distance value, obtaining correction data for the pixel (Figure 5; Paragraphs 0006-0014; i.e. reading a correction value corresponding to the concentric circle/rectangle) and a correction unit for correcting a pixel value based on the obtained correction data, correcting a pixel value of the pixel (Paragraphs 0006-0014) wherein the correction data is divided into a plurality of segments (Figures 5A and 5B). However, Goto determines correction values through the use of an initial exposure and does not disclose the use of an approximation function in the plurality of segments wherein the approximation function is represented by a quadratic function as claimed.

Yamashita discloses a shading correction system in which a shading correction value can be obtained based on distance and a parabolic wave (i.e. a quadratic equation; Figure 1; c. 4, ll. 31-42). The examiner notes that the parabolic wave of Yamashita is used for all regions of the image and would therefore cover the plurality of segments disclosed by Goto. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a shading correction system such as that described by Yamashita to generate high precision shading correction values without requiring an initial image capture to obtain shading correction values. However, Goto in view of Yamashita does not disclose obtaining independent horizontal and vertical correction values and summing the correction values as claimed.

Yamashita discloses generating a correction value from a parabolic wave generator and horizontal and vertical sync signals, but does not disclose exactly how it is done. Ban discloses a system which uses horizontal and vertical sync values and horizontal and vertical parabolic wave generators which input into an adder for determining a final correction value (Figure 2A; c. 1, ll. 26-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a correction value generating method as taught by Ban to obtain a proper correction value for performing shading correction based on horizontal and vertical sync signals without complicated mathematical processing.

[claim 8]

Regarding claim 8, note that Goto discloses a digital camera including the shading correction system (Paragraph 0024), but does not explicitly disclose a

rewritable memory in which data regarding the sample points is stored. Official Notice is taken that digital cameras including rewriteable memory which stores details of how the camera operates (e.g. firmware controlling camera operation) are well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a rewriteable memory which contains details of the sample points (e.g. firmware controlling camera operation) in the camera of Goto to allow for updating of the camera if necessary at a later date. For further details, see the rejection of claim 6 above.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

i. Gallagher US 6,940,546

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 11-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TJH
6/7/2007

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